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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,751	12/11/2001	Matthew L. Babicki	6454-61583	6240

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KLARQUIST SPARKMAN, LLP  
121 SW SALMON STREET  
SUITE 1600  
PORTLAND, OR 97204

EXAMINER

LAWRENCE JR, FRANK M

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/021,751

Applicant(s)

BABICKI ET AL.

Examiner

Frank M. Lawrence

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 73,74,76,79,82-89,91,98,100-110 and 122-127 is/are allowed.
- 6) ☒ Claim(s) 159-166,172,173,194-199,202-205 and 256-259 is/are rejected.
- 7) ☒ Claim(s) 174,178,184,188,190-193,200,201,206-255 and 260-264 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims pending in the application are 73,74,76,79,82-89,91,98,100-110,122-127,159-166,172-174,178,184,188 and 190-264.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 159, 160, 163, 164, 172, 194, 195, 203, 204, 256, 258 and 259 are rejected under 35 U.S.C. 102(b) as being anticipated by Sircar (4,756,723).

3. Sircar '723 teaches a process for preparing high purity oxygen, comprising passing a feed gas containing oxygen, nitrogen, and water through a PSA unit then flowing the oxygen rich product to a storage unit. The PSA unit includes four adsorbers, each having an inlet and outlet, a water adsorbent layer adjacent the inlet, a nitrogen adsorbent layer downstream from the water adsorbent layer, and valves in the outlets that allow product flow from the adsorbers. The water adsorbent layer reduces diffusion of water to the nitrogen adsorbent layer. The inlets are connected via valves to a purge outlet (breather). The adsorbents are periodically regenerated under reduced pressure (see figure 1, col. 2, line 61 to col. 3, line 66).

4. Claims 159, 160, 163, 164, 172 and 256 are rejected under 35 U.S.C. 102(b) as being anticipated by Schaub et al. (5,989,314).

5. Schaub et al. '314 teach a PSA process for separating components from an air stream, comprising adsorbers that have a water adsorbent layer (3) adjacent an inlet end and a carbon dioxide adsorbent layer (2) downstream from the water adsorbent layer. The water adsorbent layer reduces diffusion of water to the carbon dioxide adsorbent layer. The adsorbents are

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periodically regenerated under reduced pressure (figure, col. 1, line 15-64, col. 4, lines 41-58, col. 7, line 63 to col. 8, line 7).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 161, 165, 173, 196, 198, 199, 202 and 205 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar '723 in view of Dangieri et al. '675.

8. Sircar '723 discloses all of the limitations of the claims except that the PSA system is a fast cycle or non-conventional PSA system. Dangieri '675 disclose a fast cycle PSA system having a total operating time for each cycle of 2-10 seconds (col. 1, lines 11-22; claim 23). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the PSA system of Sircar '723 by incorporating a fast cycle arrangement in order to achieve a higher adsorbent productivity.

9. Claim 257 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar '723.

10. Sircar '723 discloses all of the limitations of the claim except that the contaminant sensitive adsorbent is replaced. It is submitted that one having ordinary skill in the art at the time of the invention would know that adsorbent replacement would be necessary when its adsorbing capacity has been diminished due to the buildup of permanently adsorbed materials to appoint that renders the adsorbent no longer economically feasible.

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11. Claims 162, 166 and 197 rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar '723 in view of Dangieri et al. '675 as applied to claim 159 above, and further in view of Mattia (4,452,612).

12. Sircar '723 in view of Dangieri et al. '675 disclose all of the limitations of the claims except that the adsorption apparatus is a rotary system having a rotor, stator and rotary valve surface and has a process cycle frequency of at least 10 cycles per minute. Mattia '612 discloses a rotary PSA apparatus using a rotor and stator with cooperating valve surfaces for the separation and purification of gases and vapors continuously (col. 2, lines 22-40 and 57-59). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the PSA system of the prior art by using a rotary system in order to provide a continuous system using multiple beds that avoid the gas loss from the pressure release during desorption and have a high efficiency and flexibility at minimal costs. It is submitted that the cycle frequency is a parameter that would have been routinely optimized by one having ordinary skill in the art absent a proper showing of criticality, based on the desired level of adsorption and regeneration that will be achieved within the cycles.

***Allowable Subject Matter***

13. Claims 174, 178, 184, 188, 190-193, 200, 201, 206-255 and 260-264 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. Claims 73, 74, 76, 79, 82-89, 91, 98, 100-110 and 122-127 are allowed.

15. The following is an examiner's statement of reasons for allowance: Reasons for allowance of the listed claims are given in previous office actions.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

16. Applicant's arguments filed March 10, 2005 have been fully considered but they are not persuasive. Note that the above art rejections are exactly identical to those of the previous non-final office action. Applicant argues that because the instant claim 159 was previously allowed by the examiner over the cited prior art, it should remain allowable, however after further consideration of the claims and the new claims submitted October 29, 2004, the examiner found many to be anticipated by or obvious over the Sircar and Schaub et al. patents. The previous allowability of the art-rejected claims has been withdrawn with the rejections presented in the non-final action of December 7, 2004. Note that applicant states that claims 258 and 259 depend from claim 159, however claim 258 is independent.

17. Applicant also argues that Sircar does not teach using a layer of guard material or reducing diffusion of the contaminant from the guard material to the contaminant sensitive adsorbent material, however the water adsorbent layer acts as a guard layer for reducing diffusion of water through the layer to the downstream nitrogen zeolite adsorbent layer.

18. With respect to the Schaub et al. patent, applicant argues that water cannot be considered as a contaminant and the second alumina layer cannot be considered as a contaminant sensitive adsorbent as defined in the instant invention. Schaub et al. discloses that the second alumina adsorbent is a carbon dioxide adsorbent that can be contaminated by water, therefore the first

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alumina adsorbent for adsorbing water is considered to be a guard layer for reducing diffusion of water to the carbon dioxide adsorbent layer.

19. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the contaminant will not desorb from the adsorbent at the designed regeneration pressure) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, the instant specification only lists these contaminant types as "particularly including" and recites water as an example.

20. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, motivation to use a fast cycle PSA arrangement is found in the first column of the Dangieri et al. patent as discussed in paragraph 8 above.

### ***Conclusion***

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**



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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank M. Lawrence  
Primary Examiner  
Art Unit 1724

*Frank Lawrence*  
4-27-05

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